



United States Patent [19]

Ward

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[54] MULTI-LAYER FORMING FABRIC WITH STITCHING YARN PAIRS INTEGRATED INTO PAPERMAKING SURFACE

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[58] Field of Search 139/383 A

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[57] ABSTRACT

A multi-layer papermaker's forming fabric has stitching yarns integrated into the papermaking surface. Each of a plurality of repeating units of the fabric comprises: a set of top machine direction yarns; a set of top cross-machine direction yarns interwoven with the top machine direction yarns; a set of bottom machine direction yarns; a set of bottom cross-machine direction yarns interwoven with the bottom machine direction yarns; and pairs of first and second stitching yarns. The stitching yarn pairs are positioned between pairs of top cross-machine direction yarns. The stitching yarns of each pair are interwoven with the top and bottom machine direction yarns such that, as a fiber support portion of the first stitching yarn is interweaving with the top machine direction yarns, a binding portion of the second stitching yarn is positioned below the top machine direction yarns, and such that as a fiber support portion of the second stitching yarn is interweaving with the top machine direction yarns, a binding portion of the first stitching yarn is positioned below the top machine direction yarns. The first and second stitching yarns cross each other as they pass below a transitional top machine direction yarn. Also, each of the binding portions of the first and second stitching yarns passes below at least one of the bottom machine direction yarns. In this configuration, the stitching yarns are completely integrated into the top, or papermaking, surface of the fabric, and therefore do not adversely impact the papermaking qualities of the fabric.

15 Claims, 6 Drawing Sheets

